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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,271	06/09/2006	Didier Marsacq	128259	4808

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EXAMINER	
CHUANG, ALEXANDER	
ART UNIT	**PAPER NUMBER**
1795	

MAIL DATE	DELIVERY MODE
02/23/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,271	MARSACQ ET AL.	
	Examiner	Art Unit	
	Alexander Chuang	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

ALKALINE FUEL CELL UNAFFECTED BY CARBONATION

1. Applicants' request for reconsideration was received on September 12th 2008. No claims are amended.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claim rejections under 35 U.S.C. 103(a) as being unpatentable over Landsman et al in view of Quinn et al, Herman et al, and Yokoyama et al are withdrawn because applicants' arguments regarding the combination is persuasive.

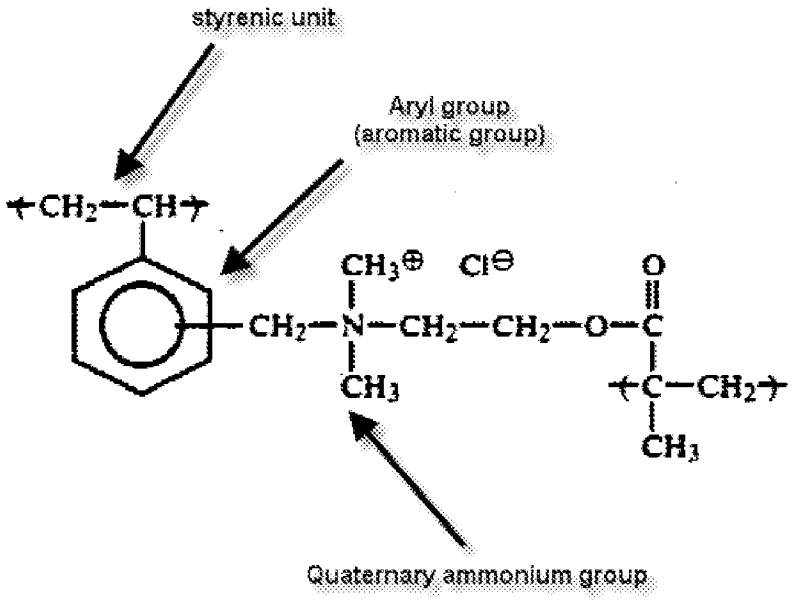
4. Claims 11-13, 15-19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Landsman et al (US 5,480,735) in view of Hodgdon et al (US 5,118,717).

Landsman et al disclosed an alkaline fuel cell comprising two electrodes (anode 1 and cathode 2) each with active layers (figure 2) and an electrolyte-filled matrix (3). A flow of ions (hydroxide) flows through the electrolyte to complete the electrical circuit (1: 47-48). The catalysts layers are composed on the electrodes layers (cathode and anode) and oriented to toward the matrix (2: 62-67 and 3: 1). Landsman et al does not disclose a solid membrane, but teaches the hydroxide ions passes through the electrolyte (and the matrix) (1: 47-48). An

electrolyte-filled matrix and a solid membrane for conducting hydroxide ions are considered functionally equivalent ion conducting methods.

Landsman et al disclosed the electrodes comprising catalyst and electronic conductive element; however, the reference does not explicitly disclose a polymer comprising a quaternary ammonium group which conducts hydroxide ions. Hodgdon et al teaches an anion exchange polymer having a vinylaromatic group, a quaternary amino group with a chloride counter ion (see example 1). The reference states the membranes have physical or chemical resistance towards caustic degradation and organic fouling (2: 33-40). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the anion exchange membrane to conduct hydroxide ions in the electrode of Landsman, because Hodgdon et al teaches the anion exchange membrane is resistant to caustic degradation and organic fouling.

As to claims 12 and 13, Landsman et al does not explicitly disclose a polymer comprising a quaternary ammonium group which conducts hydroxide ions, Hodgdon et al disclosed an anion exchange membrane comprising styrenic units and quaternary ammonium function group. The reference states the membranes have physical or chemical resistance towards caustic degradation and organic fouling (2: 33-40). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the anion exchange membrane to conduct hydroxide ions in the electrode of Landsman, because Hodgdon et al teaches the anion exchange membrane is resistant to caustic degradation and organic fouling.



As to claim 15, Landsman et al teaches the porous substrate comprises of carbon paper, nickel or gold (3: 7-15). Both electrodes employ platinum as a catalyst (3: 30-65) as stated in instant claim 16.

As claim 17, Landsman et al teaches the catalyst may comprise of platinum, gold, and silver. Since the porous substrate may comprise of gold, the catalyst layer is formed by the electronic conductive element.

As to claim 18, Landsman et al teaches the catalyst layer is supported by a mesh gold plated nickel screen (example 1, 6:1-5).

As to claim 20, Landsman et al teaches the catalyst layer is in between the matrix (3) and the electrodes (1, 2). Additionally, the electrodes are porous (3: 7-9). Therefore, the Landsman et al combination teaches active layer is situated between a diffusion layer (electrode) and the solid membrane.

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Landsman et al (US 5,480,735) and Hodgdon et al (US 5,118,717) as applied to claim 11-13, 15-18 and 20 above, and in further view of Yokoyama et al (US 4,374,924).

The teachings of Landsman et al and Hodgdon above are incorporated herein.

Yokoyama et al disclosed an antistatic layer comprising of a polymer (formula 1 in abstract). The reference teaches the material has low surface electric resistance (2: 41-46). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the polymer of Yokoyama et al in the fuel cell f Landsman et al, because Yokoyama et al teaches the membrane has low surface electric resistance.

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Landsman et al (US 5,480,735) and Hodgdon et al (US 5,118,717) as applied to claim 11-13, 15-18, and 20 above, and further in view of MacDonald (US 5,037,858).

The teachings of Landsman et al and Hodgdon above are incorporated herein.

As to claim 19, Landsman et al discloses an electrolyte-filled matrix as the electrolyte; the reference does not explicitly disclose using a solid membrane as an electrolyte. MacDonald discloses an anion exchange membrane (abstract). The membrane of example one has an ionic conductivity of 0.006 S/cm. The reference states the membrane is useful in electrodialysis, electrolytic systems, as well as other types of electrochemical systems (5: 18-25). An electrolyte-filled matrix and an anion exchange membrane are considered functionally equivalent hydroxide (an anion) conductor. Therefore, it would have been obvious to one of ordinary skill

in the art to substitute an electrolyte-filled matrix for the anion exchange membrane; because MacDonald teaches the anion exchange membrane has a high conductivity and is useful in electrochemical systems.

Response to Arguments

7. Applicants' arguments with respect to claim 11-20 have been considered but are moot in view of the new ground(s) of rejection.

8. Applicants' arguments regarding Landsman et al reference have been fully considered but they are not persuasive.

Applicants' principal arguments are:

(a). Landsman et al coincides with an alkali fuel cell with a porous non-conducting matrix positioned between the anode and cathode.

(b). The claimed invention is a solid membrane that does not require electrolyte exchanging hydroxide ions in liquid form.

In response, please consider the following:

(a). An electrolyte-filled matrix and a solid membrane for conducting hydroxide ions are considered functionally equivalent ion conducting methods since both conduct ions (1: 47-48). Thus, it would have been obvious to one of ordinary skill in the art to substitute a solid membrane for an electrolyte-filled matrix.

(b). The claimed subject matter does not exclude an electrolyte in liquid form.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Chuang whose telephone number is (571)270-5122. The examiner can normally be reached on Monday to Thursday 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571)-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AC
Alexander Chuang
Patent Examiner GAU 1795
February 17th 2009

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795